

relatively high barometric pressure over eastern and southeastern Alaska, as was observed during much of the month of March, 1924, is commonly associated with low barometric pressure over that part of the United States west of the Rocky Mountains, in which region of low barometric pressure, many of the cyclones of the month were first observed.

WASHINGTON FORECAST DISTRICT

Storm warnings were required at frequent intervals for the Atlantic and Gulf coasts. The first display was on the 8th, when at 9 a. m. northwest storm warnings were ordered for the Atlantic coast from Delaware Breakwater to Portland, Me., when a disturbance of increasing intensity was central in the vicinity of Nova Scotia. This was followed by a display of storm warnings on the east Gulf Coast on the morning of the 9th; and on the 10th the display of storm warnings was extended to the entire Atlantic coast north of Juniper Inlet, Fla. This disturbance developed into what may be regarded as the severest and most prolonged disturbance of the month. On the morning of the 10th when the primary storm center was over the Ohio Valley there were evidences of the formation of another disturbance off the Carolina coast. As ordinarily happens when this type of pressure distribution occurs the primary cyclone disappears while the secondary increases greatly in intensity. This happened in this case, so that within 24 hours the primary cyclone disappeared while the one off the Carolina coast developed, moved northward and gained great intensity. By the morning of the 11th the pressure had fallen to 28.82 inches at Cape Henry, Va., and gales were general along practically the entire Atlantic seaboard. On the evening of the 10th when it was apparent that this condition would take place, the ordinary storm warnings were displaced by "whole gale" warnings on the Atlantic coast between Delaware Breakwater and Portland, Me. It was necessary to continue warnings on the Atlantic coast as far south as Savannah, Ga., into the 13th.

This great storm had scarcely passed off the coast, when it became necessary on the 13th to display storm warnings on the east Gulf and South Atlantic coasts, in connection with a disturbance that passed rapidly eastward from near the mouth of the Rio Grande to the South Atlantic coast, attended by strong winds and general rains and snows in the Southern States. During the 16th and 17th small-craft warnings remained displayed at and north of the Virginia Capes, while during the period, the 19th to 21st, storm warnings were displayed on one or more of these days for the entire Atlantic and east Gulf coasts. The disturbance in question was central the morning of the 19th near the mouth of the Rio Grande. It gained intensity very rapidly and started to move east-northeastward. On the morning of the 20th the primary center was over western Tennessee, while at the same time there were unmistakable indications of the formation of a secondary cyclone center over southern Georgia. The primary center over western Tennessee advanced northeastward and disappeared over the upper Ohio Valley, while the secondary over southern Georgia gained markedly in intensity and moved north and became a storm of marked severity by the time its center passed east-northeastward off the Virginia Capes on the 20th. Another disturbance central the morning of the 26th over the upper Ohio Valley made necessary the display of storm warnings at that time on the Atlantic coast at and north of the Virginia Capes, and on the 28th

when a disturbance of pronounced character was central over Kansas, storm warnings were displayed on the east Gulf coast and on the 29th when the center of this disturbance was over southern Iowa, storm warnings were displayed on the Atlantic coast at and north of Jacksonville, Fla.

Frost warnings were required during the month on a number of days for the Southern States, and on the 29th cold wave warnings were ordered for the Ohio Valley and Tennessee.

CHICAGO FORECAST DISTRICT

For a winter month, March, 1924, in the Chicago Forecast District was comparatively quiet, from the point of view of the forecaster. Only one severe storm affected the district, but that indeed was a notable one; further reference to it will appear later in this report. Sudden and marked temperature fluctuations were largely absent during the month, and as a corollary but few cold waves occurred. The only cold wave warnings issued were those on the 6th for northeastern Minnesota, and on the 29th for northwestern Missouri and southeastern Iowa. The former was not verified, although the antecedent conditions appeared to have been almost ideal. Probably the explanation lies in the fact that the cyclonic area centered over western Lake Superior on the morning of the 6th was sluggish in its further movement. Twenty-four hours later the center had advanced only to northern lower Michigan. The cold wave warnings of the 29th were verified, but as developments showed, the warnings should have embraced in their scope northern Illinois and southern lower Michigan, even though a technical verification was not attained over all these two areas.

Warnings, advisory as to expected storm conditions on Lake Michigan, were issued on the 3d, 20th, 28th, and 29th, the last mentioned being a continuation of the warning of the previous date. On the night of the 3d a disturbance of increasing energy and with a central pressure of 29.36 inches was over northeastern Kansas, advancing toward the Great Lakes. Accordingly, advices were issued to the effect that strong shifting winds and moderate gales might be expected over Lake Michigan. Although the disturbance maintained its low pressure as it crossed the Lakes, no winds of storm force were registered. The next advisory warning was issued on the 20th, when a disturbance of rather marked character was central in western Tennessee with a north-northeastward movement. On the afternoon of the date in question a maximum velocity of 36 miles an hour occurred at Chicago, and 31 miles at Milwaukee.

The most important storm of the month, and in fact one of the most severe storms of record in certain portions of the district, prevailed on the 28th, 29th, and 30th. It appears to have originated, or at any rate it developed, over the northern Rocky Mountain region. By the morning of the 28th the center was in eastern Colorado with barometer readings of 29.24 inches at Denver and Pueblo. Thence a north-northeast course was taken, which carried the center across the extreme southern end of the upper Lake region and later down the St. Lawrence Valley. By the night of the 28th the storm was showing marked intensity, and accordingly a warning, in which vessel masters were advised to exercise caution, was issued for Lake Michigan. During the passage of the disturbance from Kansas to the upper Lake region sharply contrasted weather conditions prevailed on the two sides (northern and southern) of the storm. Over the former area a great snowstorm occurred, accompanied